

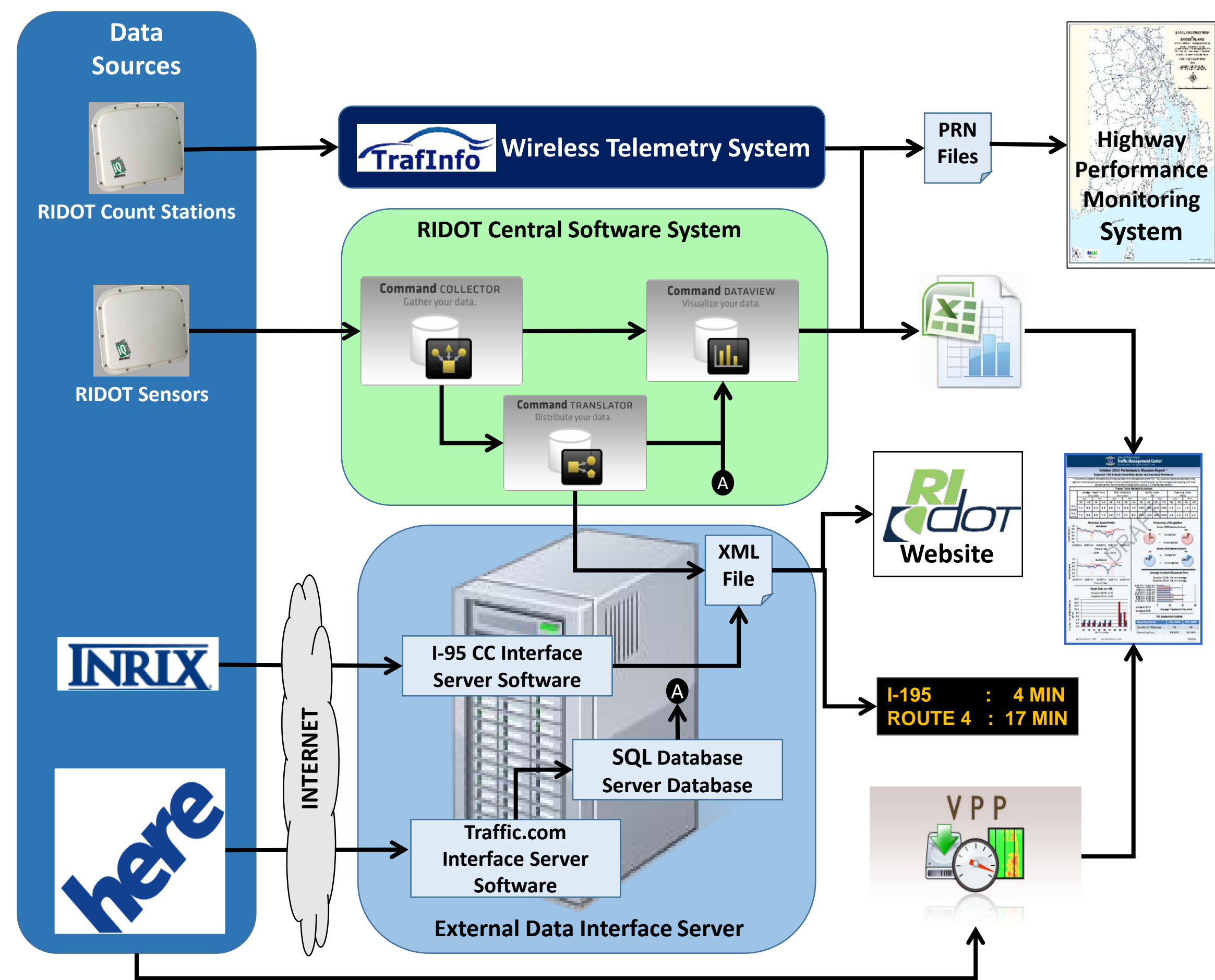
System Performance Measurement Applications in Rhode Island

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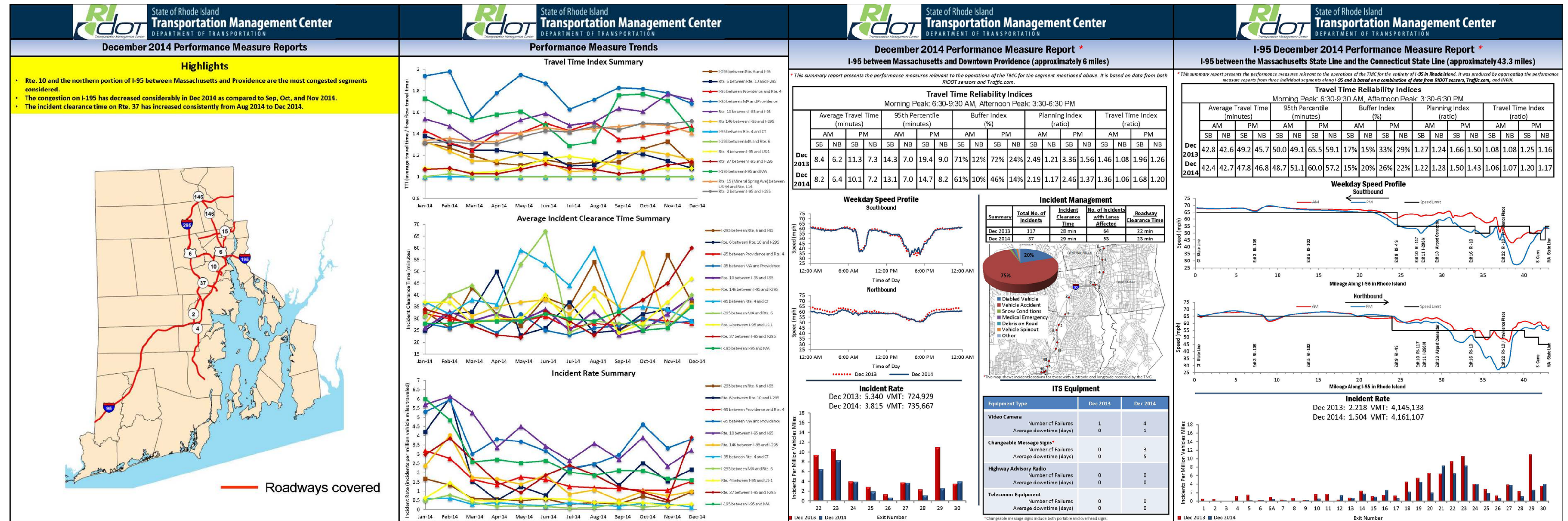
Abstract

The Rhode Island Department of Transportation (RIDOT) is among several agencies using performance measurement to monitor and enhance traffic operations and incident management in their Transportation Management Center (TMC). Extensive work has been completed to integrate and aggregate data from various sources within the Department as well as from private sources. RIDOT maintains several non-intrusive sensors for real-time data collection on the major highways. Furthermore, there are several continuous count stations used to collect traffic volume and vehicle classification information. These data sources are aggregated and shared between the TMC and the Highway Performance Monitoring System (HPMS). In addition, data is obtained from private sources such as HERE (formerly Traffic.com) as well as from INRIX through the I-95 Corridor Coalition. These data sources in conjunction with the TMC's incident data are combined to produce performance measures. The RIDOT TMC produces monthly performance measure reports for interstates and principal arterials. These reports include travel time reliability indices, incident management and response measures, and measures related to RIDOT's ITS equipment. The performance metrics are tracked over time to identify trends. The performance measures on the individual state highways are aggregated and compiled to produce statewide metrics for submission to the Governor and the State Legislature. Performance measures are also tracked for a specific project receiving TIGER grant funding. RIDOT also has a web based dashboard to inform the general public on system performance through metrics that are directly applicable and easily understandable. The travel time reliability measures were re-purposed in a manner consistent with the public's perception of traffic congestion on a day-to-day basis on Rhode Island roadways. The metrics underwent numerous iterations to ensure the data presented adequately conveys the traffic congestion on the state's major highways. RIDOT is undertaking research efforts to determine the systems and resources needed to compute the system and freight performance measures likely to be required as part of the MAP-21 national reporting requirements. The research project involves analysis and data imputation of the Federal Highway Administration's National Performance Management Research Data Set (NPMRDS). It also includes combining data from multiple sources such as the NPMRDS and traffic data from the Highway Performance Monitoring System (HPMS) into a common geo-spatial reference system. This would not only simplify the computation of the performance measures but also allow for efficient data-sharing within RIDOT and with other transportation agencies in the state.

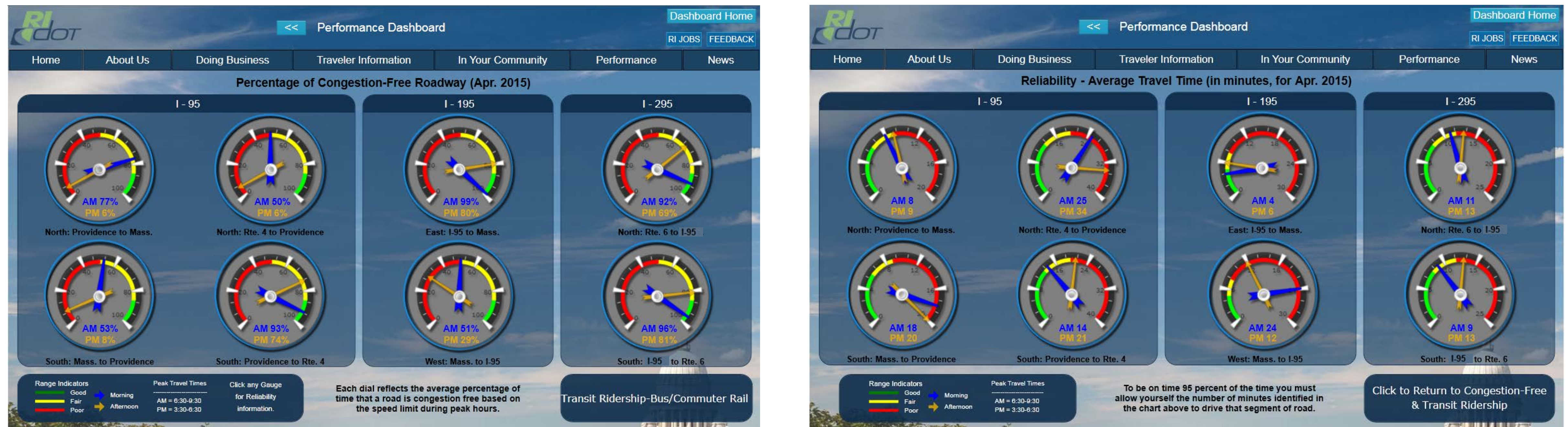
Data Integration and Aggregation



Performance Measures Reports

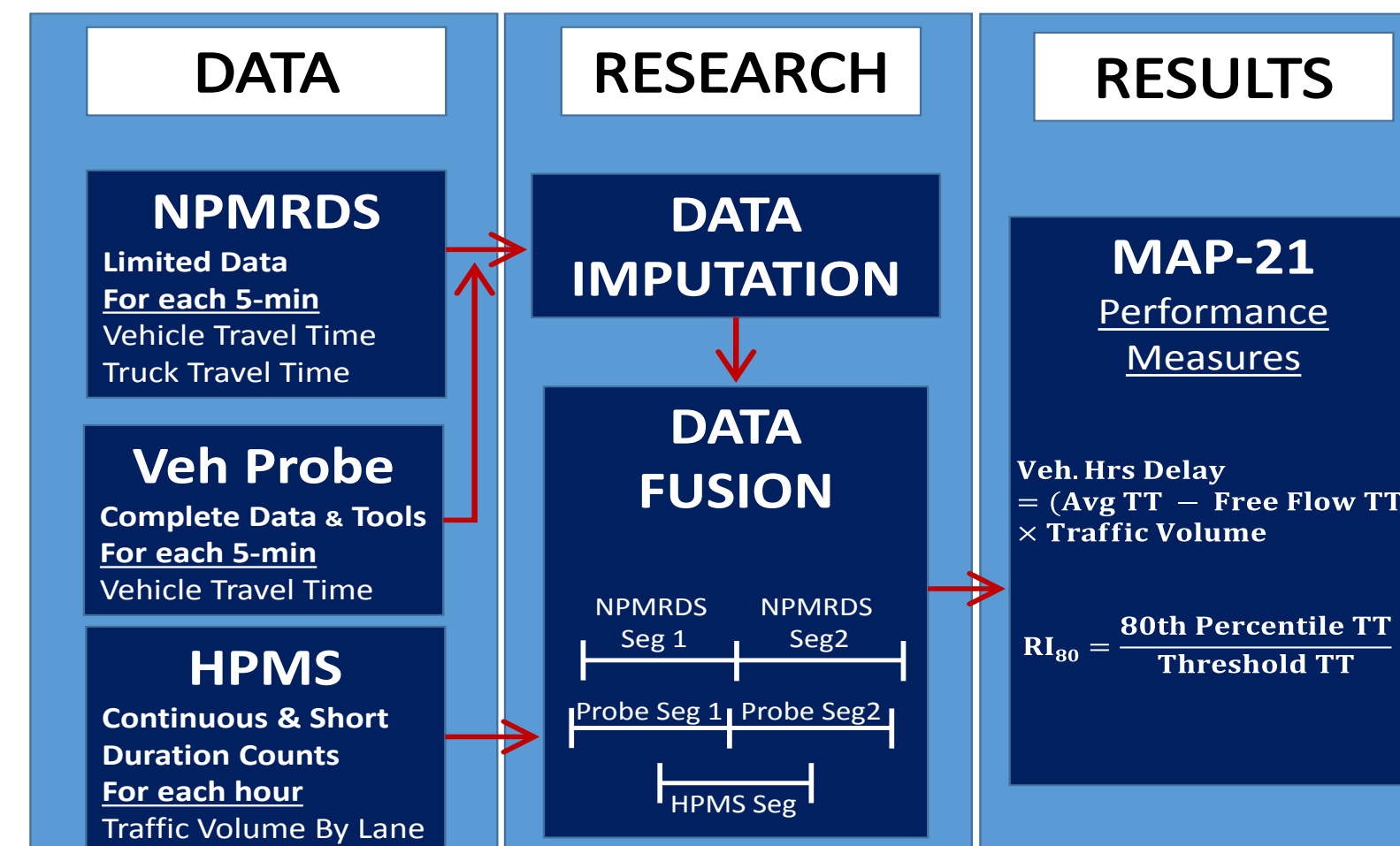


Web-based Dashboard



Research

- Develop an imputation method to fill in data gaps and a procedure to exclude outliers within the NPMRDS
- Develop a data fusion process to combine travel time data from multiple sources with disparate segmentation
- Incorporate traffic volume data, including truck volume data, to a common geospatial reference system
- Compute the MAP-21 mobility-related performance measures for the State of Rhode Island



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